



**NextGenPSD2 XS2A Framework  
Implementation Guidelines  
Extended Services  
AIS for Savings and Loans Accounts**

Version 1.0

19 April 2021

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## 1 Introduction

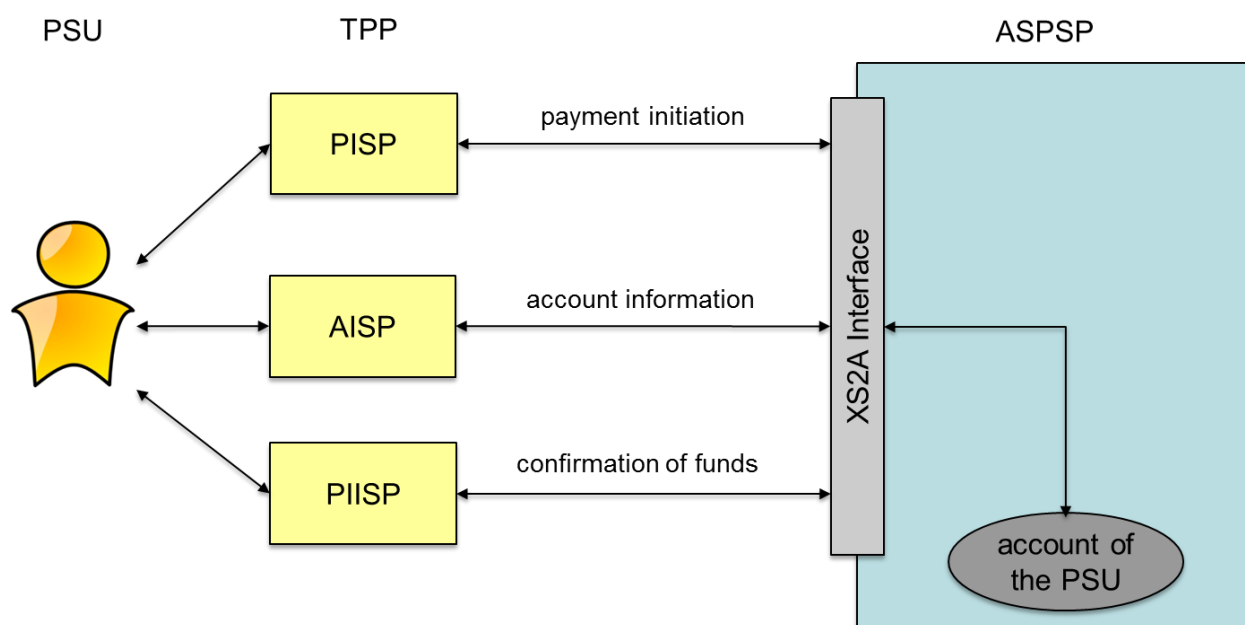
### 1.1 Background

With [PSD2] the European Union has published a new directive on payment services in the internal market. Member States had to adopt this directive into their national law until 13<sup>th</sup> of January 2018.

Among others [PSD2] contains regulations of new services to be operated by so called Third Party Payment Service Providers (TPP) on behalf of a Payment Service User (PSU). These new services are

- Payment Initiation Service (PIS) to be operated by a Payment Initiation Service Provider (PISP) TPP as defined by article 66 of [PSD2],
- Account Information Service (AIS) to be operated by an Account Information Service Provider (AISP) TPP as defined by article 67 of [PSD2], and
- Confirmation of the Availability of Funds service to be used by Payment Instrument Issuing Service Provider (PIISP) TPP as defined by article 65 of [PSD2].

For operating the new services a TPP needs to access the account of the PSU which is usually managed by another PSP called the Account Servicing Payment Service Provider (ASPSP). As shown in the following figure, an ASPSP has to provide an interface (called "PSD2 compliant Access to Account Interface" or short "XS2A Interface") to its systems to be used by a TPP for necessary accesses regulated by [PSD2]:



Further requirements on the implementation and usage of this interface are defined by a Regulatory Technical Standard (short RTS) from the European Banking Authority (short EBA), published in the Official Journal of the European Commission.

Currently, an account is assumed to be a payment account. Special endpoints for card accounts or (single) cards have also been defined, but most other types of accounts cannot or not fittingly be addressed via the defined endpoints. Specifically, the current endpoints do not provide a data model to cover the relevant information of a savings account or a loan account.

This point will be addressed in the following extension of the AIS protocol. For this aim, new endpoints will be defined for **savings accounts** and **loan accounts**.

Also an extension of the consent model to restrict access to only accounts of one type (e.g. savings accounts or loan accounts) will be defined. This extension will be compatible to other extensions with a similar aim.

To achieve this, three downward compatible changes will be made to the protocol:

1. A mechanism to specifically request access to only one accountType is defined.
2. New endpoints are defined to specifically request information on savings and loan accounts.

## 1.2 XS2A Interface Specification

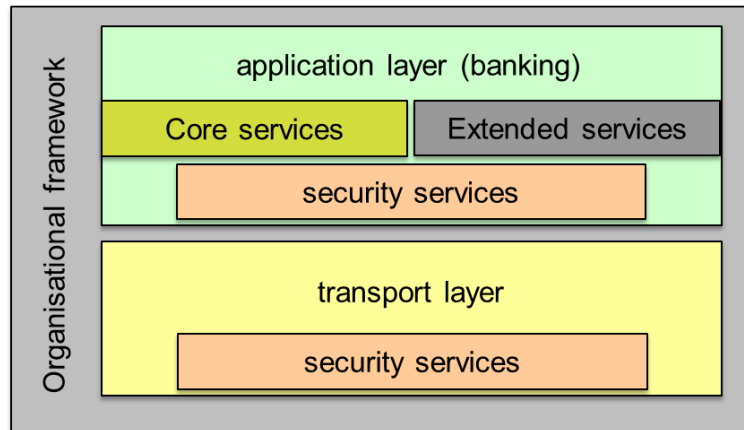
This document is an extension of the NextGenPSD2 XS2A Specification which defines a standard for an XS2A Interface and by this reaching interoperability of the interfaces of ASPSPs at least for the core services defined by [PSD2].

The XS2A Interface is designed as a B2B interface between a TPP server and the ASPSP server. For the time being, the protocol defined in this document is a pure client-server protocol, assuming the TPP server being the client, i.e. all API calls are initiated by the TPP. In future steps, this protocol might be extended to a server-server protocol, where also the ASPSP initiates API calls towards the TPP.



The Interoperability Framework defines operational rules, requirements on the data model and a process description in [XS2A-OR].

This document details the standard in defining messages and detailed data structures for **extended services** of the XS2A Interface. For the specification the two layers shown in the following figure are distinguished:



This document now describes how the existing services for account information can be extended to provide account information on savings accounts and loan accounts. For loan accounts, new endpoints are defined in order to provide the information.

**Remark for Future:** Please note that the Berlin Group NextGenPSD2 XS2A interface is still under constant development. Technical issues, which are already in discussion within the Berlin Group NextGenPSD2 working structure are mentioned in this document by "Remark for Future" to make the reader aware of upcoming potential changes.

### 1.3 Document History

Version	Change/Note	Approved
1.0	Initial version	19 April 2021 by openFinance TF





## 2 Character Sets and Notations

For definition on character Sets and Notations as well as for request and response notations refer to Chapter 2 of [XS2A-IG].

## 3 Transport Layer

For details on the transport Layer, please refer to Chapter 3 in [XS2A-IG].



## 4 Application Layer: Guiding Principles

The following extension will define requests for a TPP to get information on savings accounts and loan accounts. As the two are independent from each other, the extension is done modularly:

- Chapter 5 describes the extension for savings accounts
- Chapter 6 describes the extension for loan accounts
- Chapters 7 describes the extension of existing Complex Data Types and the definition of new data types. This chapter is relevant for both savings accounts and loan accounts.

ASPSPs that decide to only implement one of the services can therefore ignore the chapter that addresses the changes for the service they do not intend to implement.

### 4.1 Sealing Requirements

The ASPSP may require the TPP to sign request messages. This requirement shall be stated in the ASPSP documentation. The signing requirements are defined in [XS2A-IG]. No specific requirements are defined for the Account Information Services on savings accounts or loan accounts.

### 4.2 API Access Methods

#### 4.2.1 Savings Accounts Endpoints

For savings accounts, the following two possibilities regarding endpoints should be discussed:

1. The same endpoints and access methods will be used as for regular payment accounts. For details, see [XS2A-IG], chapter 4.11.2 "Accounts Endpoints". So, the differences will be on data dictionary and attribute but not on access method level.
2. New endpoints will be defined in analogy to the existing endpoints for regular payment accounts. This second variant is motivated by the fact that in some countries an IBAN may not be sufficient to uniquely identify a savings account. Therefore, contents of AIS responses as well as consents most likely diverge for regular accounts and savings accounts. A set of separate endpoints would reflect this more adequately.

The following additional restrictions for saving accounts need to be respected:

- Standing orders are not supported for savings accounts. Therefore, the code "information" for query parameter "bookingStatus" of a request for a transaction list does not make sense in the context of a savings account. If the same endpoint is used for savings accounts and (regular payment) accounts (see possibilities above), an ASPSP that in principle supports requests for a transaction list with bookingStatus = "information" must not decline such a request, (only) because the referenced account



is a savings account. Instead, the ASPSP has to respond with an empty transaction list.

If it is decided to define separate endpoints (possibility 2), the following table gives an overview on the HTTP access methods supported by the new API endpoint and by resources created through this API.

Endpoints/Resources	Method	Condition	Description
savings	GET	Mandatory	Read all identifiers of the savings account, to which an access has been granted to through the /consents endpoint by the PSU. In addition, relevant information about the savings accounts and hyperlinks to corresponding loan account information resources are provided if a related consent has been already granted.  Section 5.1.
savings/{savings-account-id}	GET	Mandatory	Read detailed information about the addressed savings account.  Section 5.2.
savings/{savings-account-id}/balances	GET	Mandatory	Read detailed balance information about the addressed savings account.  Section 5.3.
savings/{savings-account-id}/transactions	GET	Mandatory	Read transaction reports or transaction lists related to a given savings account. For a given savings account, additional parameters are e.g. the attributes "dateFrom" and "dateTo".  Section 5.4.

#### 4.2.2 Loan Accounts Endpoints

The following table gives an overview on the HTTP access methods supported by the new API endpoint and by resources created through this API.



Endpoints/Resources	Method	Condition	Description
loans	GET	Mandatory	Read all identifiers of the loan account, to which an access has been granted to through the /consents endpoint by the PSU. In addition, relevant information about the loan accounts and hyperlinks to corresponding loan account information resources are provided if a related consent has been already granted.  Section 6.1.
loans/{loan-account-id}	GET	Mandatory	Read detailed information about the addressed loan account.  Section 6.2.
loans/{loan-account-id}/balances	GET	Mandatory	Read detailed balance information about the addressed loan account.  Section 6.3.
loans/{loan-account-id}/transactions	GET	Mandatory	Read transaction reports or transaction lists related to a given loan account. For a given loan account, additional parameters are e.g. the attributes "dateFrom" and "dateTo".  Section 6.4.

### 4.3 Specifics in Submission of Consents

Like a (regular payment) account, specific savings accounts can be addressed in a consent request by identifying the account by its IBAN. In some cases, a savings / loan account might not be connected to any globally defined identifier. Therefore, the additional element "other" is used, which might be provided instead of or in addition to an IBAN thereby identifying the specific account, for which a consent is requested. The "other" element has already been introduced for domestic purposes in [XS2A-DOM-IG].

Also, neither an IBAN nor an ID provided in the "other" element might be sufficient to *uniquely* identify a specific savings account. Therefore, an additional "serialNumber" might also be contained in the details of an account. The "serialNumber" is still missing in this version of the implementation guidelines to leave it more open for discussion. The discussion should reflect



the intention, that a consent shall be granted irrespective of a sub-account's serialNumber. If, for example, a savings account is identified by IBAN DEXXXXX... and has two sub-accounts with serialNumbers 1 and 2, the consent shall always be granted for IBAN DEXXXXX... (Only) when the TPP requests an account list, the two sub-accounts with its respective serialNumbers shall be revealed.

Additionally, a savings account can be addressed by an Account Access Object containing an identifier of the savings account / loan account accompanied by the specification of the cashAccountType to Type "SVGS" / "LOAN" (see Section 7.1). A consent of this type will grant the access to the related savings account / loan account, if the ASPSP supports the corresponding endpoints at all.

As a third / fourth way to establish a savings specific consent, the TPP can request a bank-offered consent or a global consent but restricting the requested access to a certain cashAccountType – e.g. "SVGS" or "LOAN". A consent of this type will grant the access to accounts of only the related type (e.g. savings account / loan account), if the ASPSP supports the corresponding endpoints at all (which is always the case for savings accounts as they are reached through endpoints for payment accounts).

## Examples for Establish Consent Requests

**Remark:** No specific requirements for responses, for examples for responses cp. Section 6.3.1 of [XS2A-IG].

### ***Request for a dedicated consent on transactions and balances of a dedicated savings account (uniquely identified by its IBAN)***

POST <https://api.testbank.com/v1/consents>

```
Content-Type:          application/json
X-Request-ID:         99391c7e-ad88-49ec-a2ad-99ddcb1f7756
PSU-IP-Address:      192.168.8.78
PSU-User-Agent:      Mozilla/5.0 (Windows NT 10.0; WOW64; rv:54.0)
Gecko/20100101 Firefox/54.0
Date:                 Sun, 06 Aug 2017 15:05:37 GMT
```

```
{
  "access": {
    "balances": [
      { "iban": "DE40100100103307118608" }, /* balances of a savings
account
    ],
    "transactions": [
      { "iban": "DE40100100103307118608" }, /* transactions of a
savings account
    ]
  }
}
```



```
    },
    "recurringIndicator": true,
    "validUntil": "2017-11-01",
    "frequencyPerDay": 4
}
```

### **Request for access to all savings accounts behind a specific IBAN**

POST <https://api.testbank.com/v1/consents>

Content-Type: application/json  
X-Request-ID: 99391c7e-ad88-49ec-a2ad-99ddcb1f7756  
PSU-IP-Address: 192.168.8.78  
PSU-User-Agent: Mozilla/5.0 (Windows NT 10.0; WOW64; rv:54.0)  
Gecko/20100101 Firefox/54.0  
Date: Sun, 06 Aug 2017 15:05:37 GMT

```
{
  "access": {
    "balances": [
      { "iban": "DE40100100103307118608" }, /* balances of an account
irrespective of its type
      { "iban": "DE02100100109307118603",
        "cashAccountType": "SVGS" /* balances of all savings accounts
behind this IBAN
      }
    ],
    "transactions": [
      { "iban": "DE02100100109307118603",
        "cashAccountType": "SVGS" } /* transactions of all savings
accounts behind this IBAN
      ]
    },
    "recurringIndicator": true,
    "validUntil": "2017-11-01",
    "frequencyPerDay": 4
}
```

### **Request for access to a specific savings account not identifiable by an IBAN**

POST <https://api.testbank.com/v1/consents>

Content-Type: application/json  
X-Request-ID: 99391c7e-ad88-49ec-a2ad-99ddcb1f7756  
PSU-IP-Address: 192.168.8.78



```
PSU-User-Agent:      Mozilla/5.0 (Windows NT 10.0; WOW64; rv:54.0)
Gecko/20100101 Firefox/54.0
Date:                Sun, 06 Aug 2017 15:05:37 GMT
```

```
{
  "access": {
    "balances": [
      { "other": {"identification": "MyProprietaryID-0001"} },
      { "other": {"identification": "MyProprietaryID-0002"} },
    ],
    "transactions": [
      { "other": {"identification": "MyProprietaryID-0001"}}
    ]
  },
  "recurringIndicator": true,
  "validUntil": "2017-11-01",
  "frequencyPerDay": 4
}
```

### ***Request for a bank driven consent, restricted to the related savings accounts***

POST <https://api.testbank.com/v1/consents>

```
Content-Type          application/json
X-Request-ID         99391c7e-ad88-49ec-a2ad-99ddcb1f7756
PSU-IP-Address       192.168.8.78
PSU-User-Agent       Mozilla/5.0 (Windows NT 10.0; WOW64; rv:54.0)
Gecko/20100101 Firefox/54.0
Date                 Sun, 06 Aug 2017 15:05:37 GMT
```

```
{"access":
  {"balances": [],
   "transactions": [],
   "restrictedTo": ["SVGS"]},
 "recurringIndicator": true,
 "validUntil": "2017-11-01",
 "frequencyPerDay": 4
}
```

### ***Request for access to a loan account behind a specific IBAN***

POST <https://api.testbank.com/v1/consents>

```
Content-Type:         application/json
X-Request-ID:        99391c7e-ad88-49ec-a2ad-99ddcb1f7756
```



```
PSU-IP-Address:      192.168.8.78
PSU-User-Agent:      Mozilla/5.0 (Windows NT 10.0; WOW64; rv:54.0)
Gecko/20100101 Firefox/54.0
Date:                Sun, 06 Aug 2017 15:05:37 GMT

{
  "access": {
    "balances": [
      { "iban": "DE40100100103307118608" }, /* balances of an account
irrespective of its type
      { "iban": "DE02100100109307118603",
        "cashAccountType": "LOAN" /* balances of all loan accounts
behind this IBAN
      }
    ],
    "transactions": [
      { "iban": "DE02100100109307118603",
        "cashAccountType": "LOAN" } /* transactions of all loan accounts
behind this IBAN
      ]
    },
    "recurringIndicator": true,
    "validUntil": "2017-11-01",
    "frequencyPerDay": 4
  }
}
```

***Request for a global consent, restricted to cash account types (ignoring savings accounts an loan accounts)***

```
POST https://api.testbank.com/v1/consents
Content-Type          application/json
X-Request-ID         99391c7e-ad88-49ec-a2ad-99ddcb1f7756
PSU-IP-Address       192.168.8.78
PSU-User-Agent       Mozilla/5.0 (Windows NT 10.0; WOW64; rv:54.0)
Gecko/20100101 Firefox/54.0
Date                 Sun, 06 Aug 2017 15:05:37 GMT
```

```
{"access":
  {"allPSD2": "allAccounts",
   "restrictedTo": ["CACC"]}
},
"recurringIndicator": true,
"validUntil": "2017-11-01",
"frequencyPerDay": 4
}
```





**Remark:** The latter example is relevant only in communities or for ASPSP which are offering the endpoints different from cash accounts (e.g. savings accounts, loan accounts, card accounts). In other markets, this restriction attribute is not supported.

## Multicurrency Accounts

Für savings and loan accounts, there are no specific multicurrency accounts defined. If an ASPSP provides savings and/ or loans in multiple currencies, it must provide distinct account resources, each representing a saving / loan in one specific currency.

### 4.4 Additional Error Information

No specific additional error information is needed for the extended service for savings accounts or loan accounts.

### 4.5 Status Information

#### Status Information for the AIS within the Establish Consent Process

No specific status information needed for the extended service for savings accounts or loan accounts.

## 5 New Message Types for Savings Accounts

New message types / endpoints are defined for this extended service as follows.

### 5.1 Read Savings Account List

#### 5.1.1 Request

##### Call

```
GET /v1/savings
```

Reads a list of savings accounts potentially with additional information, e.g. balance information. It is assumed that a consent of the PSU to this access is already given and stored on the ASPSP system. The addressed list of savings accounts depends then on the stored consent addressed by consentId, respectively the OAuth2 access token.

#### Query Parameters

No specific query parameter.

## Request Header

Attribute	Type	Condition	Description
X-Request-ID	UUID	Mandatory	ID of the request, unique to the call, as determined by the initiating party.
PSU-IP-Address	String	Conditional	The forwarded IP Address header field consists of  the corresponding HTTP request IP Address field between PSU and TPP. It shall be contained if and only if this request was actively initiated by the PSU.
Consent-ID	String	Mandatory	Identification of the corresponding consent as granted by the PSU.
Authorization	String	Conditional	Is contained only, if an OAuth2 based SCA was performed in the corresponding mandate transaction or if OAuth2 has been used in a pre-step.

## Request Body

No request body.

## 5.1.2 Response

### Response Code

HTTP Response Code equals 200.

### Response Header

Attribute	Type	Condition	Description
X-Request-ID	UUID	Mandatory	ID of the request, unique to the call, as determined by the initiating party.

## Response Body

Attribute	Type	Condition	Description
savingsAccounts	Array of Account Details	Mandatory	Descriptions of the accessible savings accounts.

**Remark:** The same syntactical structure is used to transport savings account information as (payment) account information.

### 5.1.3 Examples

#### Request (without PSU involvement)

GET https://api.testbank.com/v1/savings

```
Accept: application/json
X-Request-ID: 99391c7e-ad88-49ec-a2ad-99ddcb1f7756
Consent-ID: qwer3456tzui7890
PSU-User-Agent: Mozilla/5.0 (Windows NT 10.0; WOW64; rv:54.0)
Gecko/20100101 Firefox/54.0
Date: Thu, 29 Oct 2020 15:05:37 GMT
```

#### Response

```
HTTP/1.x 200 Ok
X-Request-ID: 99391c7e-ad88-49ec-a2ad-99ddcb1f7756
Content-Type: application/json
Date: Thu, 29 Oct 2020 15:05:38 GMT
{
  "savingsAccounts":
  [
    {
      "resourceId": "3dc3d5b3-7023-4848-9853-f5400a64e81g",
      "other": {"identification": "MyProprietaryID-0001"},
      "currency": "EUR",
      "ownerName": "Paul Simpson",
      "name": "Savings 1a",
      "product": "Saving Account",
      "cashAccountType": "SVGS",
      "interest": [
        {"type": "FIXD" ,
```



```

    "rate":
      [{"percentage": "1.5", /*mandatory
        "fromAmount": {"currency": "EUR", "amount": "0.0"},
        "toAmount": {"currency": "EUR", "amount": "2000"}
        },
        {"percentage": "0.1", /*mandatory
        "fromAmount": {"currency": "EUR", "amount": "2000"}
        }],
      "toDateTime": "2017-01-05T23:59:59"
    },
    {"type": "FIXD" ,
      "rate":
        [{"percentage": "0.5", /*mandatory
          "fromAmount": {"currency": "EUR", "amount": "0.0"},
          "toAmount": {"currency": "EUR", "amount": "2000"}
          },
          {"percentage": "0.1", /*mandatory
          "fromAmount": {"currency": "EUR", "amount": "2000"}
          }],
        "fromDateTime": "2017-01-06T00:00:00"
      }
    ],
    "relatedDates":{
      "contractStartDate": "2016-01-01",
      "contractEndDate": "2026-01-01",
      "contractAvailabilityDate" : "2019-01-01"
    },
    "balances":
    [{"balanceAmount": {"currency": "EUR", "amount": 5000.00"},
      "balanceType": "closingBooked",
      "referenceDate": "2020-10-01"
    }],
    "_links":
    {
      "balances": {"href": "/v1/savings/3dc3d5b3-7023-4848-9853-
f5400a64e81g/balances" },
      "transactions": {"href": "/v1/savings/3dc3d5b3-7023-4848-9853-
f5400a64e81g/transactions" }
    }
  },
  {
    "resourceId": "3dc3d5b3-7023-4848-9853-f5400a64e813",
    "other": {"identification": "MyProprietaryID-0002"},
    "currency": "EUR",
    "ownerName": "Paul Simpson",

```



```

"name": "Savings 1b",
"product": "Saving Account",
"cashAccountType": "SVGS",
"interest":[
  {"type": "FIXD" ,
    "rate":
      [{"percentage": "1.5", /*mandatory
        "fromAmount": {"currency": "EUR", "amount": "0.0"},
        "toAmount": {"currency": "EUR", "amount": "2000"}
      },
        {"percentage": "0.1", /*mandatory
        "fromAmount": {"currency": "EUR", "amount": "2000"}
      }
    ]},
  "toDateTime": "2017-01-05T23:59:59"
},
{"type": "FIXD" ,
  "rate":
    [{"percentage": "0.5", /*mandatory
      "fromAmount": {"currency": "EUR", "amount": "0.0"},
      "toAmount": {"currency": "EUR", "amount": "2000"}
    },
      {"percentage": "0.1", /*mandatory
      "fromAmount": {"currency": "EUR", "amount": "2000"}
    }
  ]},
  "fromDateTime": "2017-01-06T00:00:00"
}
],
"relatedDates":{
  "contractStartDate": "2016-01-01",
  "contractEndDate": "2026-01-01",
  "contractAvailabilityDate" : "2019-01-01"
},
"balances":
[{"balanceAmount": {"currency": "EUR", "amount": 4000.00},
  "balanceType": "closingBooked",
  "referenceDate": "2020-10-01"
}],
"_links":
{
  "balances": {"href": "/v1/savings/3dc3d5b3-7023-4848-9853-f5400a64e813/balances" },
  "transactions": {"href": "/v1/savings/3dc3d5b3-7023-4848-9853-f5400a64e813/transactions" }
}
},

```



```

{
  "resourceId": "3dc3d5b3-5765-4848-9853-f5400a64e81g",
  "iban": "DE2310010010123456799",
  "currency": "XXX",
  "ownerName": "Paul Simpson",
  "name": "Savings 2",
  "product": "Saving Account",
  "cashAccountType": "SVGS",
  "interest": [
    { "type": "FIXD" ,
      "rate":
        [{"percentage": "1.5", /*mandatory
          "fromAmount": {"currency": "EUR", "amount": "0.0"},
          "toAmount": {"currency": "EUR", "amount": "2000"}
        },
        {"percentage": "0.1", /*mandatory
          "fromAmount": {"currency": "EUR", "amount": "2000"}
        }
      ]
    },
    { "type": "FIXD" ,
      "rate":
        [{"percentage": "0.5", /*mandatory
          "fromAmount": {"currency": "EUR", "amount": "0.0"},
          "toAmount": {"currency": "EUR", "amount": "2000"}
        },
        {"percentage": "0.1", /*mandatory
          "fromAmount": {"currency": "EUR", "amount": "2000"}
        }
      ]
    },
    { "type": "FIXD" ,
      "rate":
        [{"percentage": "1.5", /*mandatory
          "fromAmount": {"currency": "ILS", "amount": "0.0"},
          "toAmount": {"currency": "ILS", "amount": "8000"}
        },
        {"percentage": "0.1", /*mandatory
          "fromAmount": {"currency": "ILS", "amount": "8000"}
        }
      ]
    }
  ],
  "toDateTime": "2017-01-05T23:59:59"
},
{ "type": "FIXD" ,
  "rate":
    [{"percentage": "0.5", /*mandatory
      "fromAmount": {"currency": "EUR", "amount": "0.0"},
      "toAmount": {"currency": "EUR", "amount": "2000"}
    },
    {"percentage": "0.1", /*mandatory
      "fromAmount": {"currency": "EUR", "amount": "2000"}
    }
  ],
  "fromDateTime": "2017-01-06T00:00:00"
},
{ "type": "FIXD" ,
  "rate":
    [{"percentage": "1.5", /*mandatory
      "fromAmount": {"currency": "ILS", "amount": "0.0"},
      "toAmount": {"currency": "ILS", "amount": "8000"}
    },
    {"percentage": "0.1", /*mandatory
      "fromAmount": {"currency": "ILS", "amount": "8000"}
    }
  ],
  "toDateTime": "2017-01-05T23:59:59"
},
{ "type": "FIXD" ,
  "rate":
    [{"percentage": "0.5", /*mandatory

```



```

        "fromAmount": {"currency": "ILS", "amount": "0.0"},
        "toAmount": {"currency": "ILS", "amount": "8000"}
    },
    {"percentage": "0.1", /*mandatory
    "fromAmount": {"currency": "ILS", "amount": "8000"}
    }],
    "fromDateTime": "2017-01-06T00:00:00"
}
],
"relatedDates":{
    "contractStartDate": "2016-01-01",
    "contractEndDate": "2026-01-01",
    "contractAvailabilityDate" : "2019-01-01"
},
"balances":
[{"balanceAmount": {"currency": "EUR", "amount": 10000.00},
  "balanceType": "closingBooked",
  "referenceDate": "2020-10-01"
},
{"balanceAmount": {"currency": "ILS", "amount": 40000.00},
  "balanceType": "closingBooked",
  "referenceDate": "2020-10-01"
}],
"_links":
{
    "balances": {"href": "/v1/savings/3dc3d5b3-5765-4848-9853-
f5400a64e81g/balances" },
    "transactions": {"href": "/v1/savings/3dc3d5b3-5765-4848-9853-
f5400a64e81g/transactions" }
}
}
]
}

```

## 5.2 Read Savings Account Details

### 5.2.1 Request

#### Call

```
GET /v1/savings/{savings-account-id}
```



Reads details about a loan account. It is assumed that a consent of the PSU to this access is already given and stored on the ASPSP system. The addressed details of this account depends then on the stored consent addressed by consentId, respectively the OAuth2 access token.

### Path Parameters

Attribute	Type	Description
savings-account-id	String	This identification is denoting the addressed savings account. The savings-account-id is retrieved by using a "Read Savings Account List". The savings-account-id is the "resourceId" attribute of the savings account structure. Its value is constant at least throughout the lifecycle of a given consent.

### Query Parameters

No specific query parameter.

### Request Header

Attribute	Type	Condition	Description
X-Request-ID	UUID	Mandatory	ID of the request, unique to the call, as determined by the initiating party.
PSU-IP-Address	String	Conditional	The forwarded IP Address header field consists of the corresponding HTTP request IP Address field between PSU and TPP. It shall be contained if and only if this request was actively initiated by the PSU.
Consent-ID	String	Mandatory	Identification of the corresponding consent as granted by the PSU.
Authorization	String	Conditional	Is contained only, if an OAuth2 based SCA was performed in the corresponding mandate transaction or if OAuth2 has been used in a pre-step.



## Request Body

No request body.

## 5.2.2 Response

### Response Code

HTTP Response Code equals 200.

### Response Header

Attribute	Type	Condition	Description
X-Request-ID	UUID	Mandatory	ID of the request, unique to the call, as determined by the initiating party.

### Response Body

Attribute	Type	Condition	Description
savingsAccount	Account Details	Mandatory	Description of the addressed savings account.

**Remark:** The same syntactical structure is used to transport savings account information as (payment) account information.

## 5.2.3 Example

### Request (without PSU involvement)

```
GET https://api.testbank.com/v1/savings/3dc3d5b3-7023-4848-9853-f5400a64e81g
```

```
Accept: application/json
X-Request-ID: 99391c7e-ad88-49ec-a2ad-99ddcb1f7756
Consent-ID: qwer3456tzui7890
PSU-User-Agent: Mozilla/5.0 (Windows NT 10.0; WOW64; rv:54.0)
Gecko/20100101 Firefox/54.0
Date: Thu, 29 Oct 2020 15:05:37 GMT
```



## Response

HTTP/1.x 200 Ok

X-Request-ID: 99391c7e-ad88-49ec-a2ad-99ddcb1f7756

Content-Type: application/json

Date: Thu, 29 Oct 2020 15:05:38 GMT

```

{
  "savingsAccount":
  {
    "resourceId": "3dc3d5b3-7023-4848-9853-f5400a64e81g",
    "iban": "DE2310010010123456788",
    "currency": "EUR",
    "ownerName": "Paul Simpson",
    "name": "Savings 1",
    "product": "Saving Account",
    "cashAccountType": "SVGS",
    "status": "enabled",
    "interest":[
      {"type": "FIXD" ,
        "rate":
          [{"percentage": "1.5", /*mandatory
            "fromAmount": {"currency": "EUR", "amount": "0.0"},
            "toAmount": {"currency": "EUR", "amount": "2000"}
          },
          {"percentage": "0.1", /*mandatory
            "fromAmount": {"currency": "EUR", "amount": "2000"}
          }
        ]},
      {"toDateTime": "2017-01-05T23:59:59"
    },
    {"type": "FIXD" ,
      "rate":
        [{"percentage": "0.5", /*mandatory
          "fromAmount": {"currency": "EUR", "amount": "0.0"},
          "toAmount": {"currency": "EUR", "amount": "2000"}
        },
        {"percentage": "0.1", /*mandatory
          "fromAmount": {"currency": "EUR", "amount": "2000"}
        }
      ]},
      {"fromDateTime": "2017-01-06T00:00:00"
    }
  ]
}

```



```

"relatedDates":{
  "contractStartDate": "2016-01-01",
  "contractEndDate": "2026-01-01",
  "contractAvailabilityDate" : "2019-01-01"
},
"balances":
[{"balanceAmount": {"currency": "EUR", "amount": 5000.00},
  "balanceType": "closingBooked",
  "referenceDate": "2020-10-01"
}],
"_links":
{
  "balances": {"href": "/v1/savings/3dc3d5b3-7023-4848-9853-
f5400a64e81g/balances" },
  "transactions": {"href": "/v1/savings/3dc3d5b3-7023-4848-9853-
f5400a64e81g/transactions" }
}
}

```

## 5.3 Read Savings Account Balances

### 5.3.1 Request

#### Call

GET /v1/savings/{savings-account-id}/balances

Reads balance data from a given savings account addressed by "savings-account-id".

#### Path Parameters

Attribute	Type	Description
savings-account-id	String	This identification is denoting the addressed savings account. The savings-account-id is retrieved by using a "Read Savings Account List" call. The savings-account-id is the "resourceId" attribute of the account structure. Its value is constant at least throughout the lifecycle of a given consent.

## Query Parameters

No specific query parameter.

## Request Header

Attribute	Type	Condition	Description
X-Request-ID	UUID	Mandatory	ID of the request, unique to the call, as determined by the initiating party.
PSU-IP-Address	String	Conditional	The forwarded IP Address header field consists of the corresponding HTTP request IP Address field between PSU and TPP. It shall be contained if and only if this request was actively initiated by the PSU.
Consent-ID	String	Mandatory	Identification of the corresponding consent as granted by the PSU.
Authorization	String	Conditional	Is contained only, if an OAuth2 based SCA was performed in the corresponding mandate transaction or if OAuth2 has been used in a pre-step.

## Request Body

No request body.

## 5.3.2 Response

### Response Code

HTTP Response Code equals 200.

### Response Header

Attribute	Type	Condition	Description
X-Request-ID	UUID	Mandatory	ID of the request, unique to the call, as determined by the initiating party.

## Response Body

Attribute	Type	Condition	Description
savingsAccount	Account Reference	Optional	Identifier of the addressed savings-account.  <b>Remark for Future:</b> Might be mandated in a later version.
balances	Array of Balance	Mandatory	

### 5.3.3 Example

GET <https://api.testbank.com/v1/savings/3dc3d5b3-7023-4848-9853-f5400a64e81g/balances>

```
Accept:          application/json
X-Request-ID:    99391c7e-ad88-49ec-a2ad-99ddcb1f7756
Consent-ID:      qwer3456tzui7890
PSU-User-Agent: Mozilla/5.0 (Windows NT 10.0; WOW64; rv:54.0)
Gecko/20100101 Firefox/54.0
Date:            Thu, 29 Oct 2020 15:05:37 GMT
```

### Response

```
HTTP/1.x 200 Ok
X-Request-ID:    99391c7e-ad88-49ec-a2ad-99ddcb1f7756
Content-Type:    application/json
Date:            Thu, 29 Oct 2020 15:05:38 GMT
```

```
{
  "savingsAccount": {"iban": "DE2310010010123456788"},
  "balances": [
    [{"balanceAmount": {"currency": "EUR", "amount": "5000.00"},
      "balanceType": "closingBooked",
      "referenceDate": "2020-10-20"}]
  ]
}
```



## 5.4 Read Savings Account Transaction List

### 5.4.1 Request

#### Call

```
GET /v1/savings/{savings-account-id}/transactions {query-parameters}
```

Reads transaction data from a given savings account addressed by "savings-account-id". This can be booked or pending transactions.

**Note:** The ASPSP might use standard compression methods on application level for the response message as indicated in the content encoding header.

**Remark:** Please note that the PATH might be already given in detail by the response of the "Read Savings Account List" call within the `_links` subfield.

#### Path Parameters

Attribute	Type	Description
savings-account-id	String	This identification is denoting the addressed savings account. The savings-account-id is retrieved by using a "Read Savings Account List" call. The savings-account-id is the "resourceId" attribute of the account structure. Its value is constant at least throughout the lifecycle of a given consent.

#### Query Parameters

Attribute	Type	Condition	Description
dateFrom	ISODate	Conditional	Starting date (inclusive the date dateFrom) of the transaction list, mandated if no delta access is required and if bookingStatus does not equal "information".  For booked transactions, the relevant date is the booking date. For pending transactions, the relevant date is the entry date, which may not be transparent neither in this API nor other channels of the ASPSP.

Attribute	Type	Condition	Description
dateTo	ISODate	Optional	<p>End date (inclusive the date dateTo) of the transaction list, default is "now" if not given. Might be ignored if a delta function is used.</p> <p>For booked transactions, the relevant date is the booking date. For pending transactions, the relevant date is the entry date, which may not be transparent neither in this API nor other channels of the ASPSP.</p>
entryReferenceFrom	String	Optional if supported by API provider	<p>This data attribute is indicating that the AISP is in favour to get all transactions after the transaction with identification entryReferenceFrom alternatively to the above defined period. This is a implementation of a delta access.</p> <p>If this data element is contained, the entries "dateFrom" and "dateTo" might be ignored by the ASPSP if a delta report is supported.</p>



Attribute	Type	Condition	Description
bookingStatus	String	Mandatory	<p>Permitted codes are "booked", "pending" and "both".</p> <p>"booked" shall be supported by the ASPSP.</p> <p>To support the "pending" and "both" feature is optional for the ASPSP, Error code if not supported. If supported, "both" means to request transaction reports of transaction of bookingStatus either "pending" or "booked".</p> <p>The "information" feature does not apply to savings accounts. Therefore, the booking status "information" is not supported on the savings endpoint. If bookingStatus="information", the response of the ASPSP shall</p> <ul style="list-style-type: none"> <li>• either be an empty transaction list (if and only if the same endpoint is used for savings accounts and payment accounts and also the ASPSP does support the "information" feature for regular accounts)</li> <li>• or a corresponding error code (PARAMETER_NOT_SUPPORTED , otherwise).</li> </ul>
deltaList	Boolean	Optional if supported by API provider	<p>This data attribute is indicating that the AISP is in favour to get all transactions after the last report access for this PSU on the addressed account. This is another implementation of a delta access-report.</p> <p>This delta indicator might be rejected by the ASPSP if this function is not supported.</p> <p>If this data element is contained, the entries "dateFrom" and "dateTo" might be ignored by the ASPSP if a delta report is supported.</p>





**Request Header**

Attribute	Type	Condition	Description
X-Request-ID	UUID	Mandatory	ID of the request, unique to the call, as determined by the initiating party.
PSU-IP-Address	String	Conditional	The forwarded IP Address header field consists of the corresponding HTTP request IP Address field between PSU and TPP. It shall be contained if and only if this request was actively initiated by the PSU.
Consent-ID	String	Mandatory	
Authorization	String	Conditional	Is contained only, if an OAuth2 based authentication was performed in a pre-step or an OAuth2 based SCA was performed in the related consent authorisation.
Accept	String	Optional	<p>The TPP can indicate the formats of account reports supported together with a prioritisation following the HTTP header definition.</p> <p>The formats supported by this specification are</p> <ul style="list-style-type: none"> <li>• xml</li> <li>• JSON</li> <li>• text</li> </ul> <p><b>Remark:</b> Content types might be extended in the next version of the specification. This shall enable the TPP to address different camt.05x versions or different MT94x versions in a corporate context. The TPP then could e.g. say: "I prefer MT942, but take MT940 if MT942 is not available."</p>

**Remark:** The Berlin Group intends to apply for vnd-entries within the "accept" attribute for camt.05x and MT94x formats to scope with different account report formats available for the PSU e.g. in a corporate context. These values will be added to this specification as soon as available. This will then lead to expressions like /application/vnd.BerlinGroup.camt.053+xml etc. The TPP then could e.g. say: "I prefer camt.054, but take camt.053 if this is not available."



This solution is recommended as a best practice until it is fully specified. In this example this would deliver the following accept header expression:

```
Accept: /application/vnd.BerlinGroup.camt.054+xml;q=0.9,
/application/vnd.BerlinGroup.camt.053+xml;q=0.8
```

## Request Body

No request body.

## 5.4.2 Response

### Response Code

HTTP Response Code equals 200.

### Response Header

Attribute	Type	Condition	Description
X-Request-ID	UUID	Mandatory	ID of the request, unique to the call, as determined by the initiating party.

### Response Body

In case the ASPSP returns a **camt.05x** XML structure, the response body consists of either a camt.052 or camt.053 format. The camt.052 may include pending payments which are not yet finally booked. The ASPSP will decide on the format due to the chosen parameters, specifically on the chosen dates relative to the time of the request. In addition the ASPSP might offer camt.054x structure e.g. in a corporate setting.

In case the ASPSP returns a **MT94x** content, the response body consists of an MT940 or MT942 format in a text structure. The MT942 may include pending payments which are not yet finally booked. The ASPSP will decide on the format due to the chosen parameters, specifically on the chosen dates relative to the time of the request.

A JSON response is defined as follows:

Attribute	Type	Condition	Description
savingsAccount	Account Reference	optional	Identifier of the addressed savings account.

Attribute	Type	Condition	Description
			Remark for Future: It is recommended to use this data element. The condition might change to "mandatory" in a next version of the specification.
transactions	Account Report	Optional	JSON based account report.  This account report contains transactions resulting from the query parameters.
balances	Array of Balance	Optional	A list of balances regarding this account, which might be restricted to the current balance.
_links	Links	Optional	A list of hyperlinks to be recognised by the TPP.  Type of links admitted in this response:  "download": a link to a resource, where the transaction report might be downloaded from in case where transaction reports have a huge size.  <b>Remark:</b> This feature shall only be used where camt-data is requested which has a huge size.

### 5.4.3 Example

GET <https://api.testbank.com/v1/savings/3dc3d5b3-7023-4848-9853-f5400a64e81g/transactions?dateFrom=2020-10-01?dateTo=2020-10-30?bookingStatus=both>

```
Accept: application/json
X-Request-ID: 99391c7e-ad88-49ec-a2ad-99ddcb1f7756
Consent-ID: qwer3456tzui7890
PSU-User-Agent: Mozilla/5.0 (Windows NT 10.0; WOW64; rv:54.0)
Gecko/20100101 Firefox/54.0
Date: Thu, 29 Oct 2020 15:05:37 GMT
```



## Response

HTTP/1.x 200 Ok

X-Request-ID: 99391c7e-ad88-49ec-a2ad-99ddcb1f7756

Content-Type: application/json

Date: Thu, 29 Oct 2020 15:05:38 GMT

```
{
  "savingsAccount": {"iban": "DE2310010010123456788" },
  "transactions":
  {
    "booked":
    [
      [
        {
          "transactionId": "1234567",
          "transactionAmount": {"currency": "EUR", "amount": "2000"},
          "bookingDate": "2020-10-01",
          "valueDate": "2020-10-02",
          "remittanceInformationUnstructured": "Example 1"
        },
        {
          "transactionId": "1234568",
          "transactionAmount": {"currency": "EUR", "amount": "2000"},
          "bookingDate": "2020-10-09",
          "valueDate": "2020-10-10",
          "remittanceInformationUnstructured": "Example 2"
        }
      ],
      "pending": /* used e.g. for the next expected entry in a monthly
      saving plan
      [
        [
          {
            "transactionId": "1234570",
            "transactionAmount": {"currency": "EUR", "amount": "2000"},
            "valueDate": "2020-10-30",
            "remittanceInformationUnstructured": "Example 4"
          }
        ]
      ]
    }
  }
}
```



## 6 New Message Types for Loan Accounts

New message types / endpoints are defined for this extended service as follows.

### 6.1 Read Loan Account List

#### 6.1.1 Request

##### Call

GET /v1/loans

Reads a list of loan accounts potentially with additional information, e.g. balance information. It is assumed that a consent of the PSU to this access is already given and stored on the ASPSP system. The addressed list of loan accounts depends then on the stored consent addressed by consentId, respectively the OAuth2 access token.

##### Query Parameters

No specific query parameter.

##### Request Header

Attribute	Type	Condition	Description
X-Request-ID	UUID	Mandatory	ID of the request, unique to the call, as determined by the initiating party.
PSU-IP-Address	String	Conditional	The forwarded IP Address header field consists of  the corresponding HTTP request IP Address field between PSU and TPP. It shall be contained if and only if this request was actively initiated by the PSU.
Consent-ID	String	Mandatory	Identification of the corresponding consent as granted by the PSU.
Authorization	String	Conditional	Is contained only, if an OAuth2 based SCA was performed in the corresponding mandate transaction or if OAuth2 has been used in a pre-step.

## Request Body

No request body.

## 6.1.2 Response

### Response Code

HTTP Response Code equals 200.

### Response Header

Attribute	Type	Condition	Description
X-Request-ID	UUID	Mandatory	ID of the request, unique to the call, as determined by the initiating party.

### Response Body

Attribute	Type	Condition	Description
loanAccounts	Array of Account Details	Mandatory	Descriptions of the accessible loans.

**Remark:** The same syntactical structure is used to transport loan account information as (payment) account information.

## 6.1.3 Examples

Request (without PSU involvement)

GET <https://api.testbank.com/v1/loans>

```

Accept: application/json
X-Request-ID: 99391c7e-ad88-49ec-a2ad-99ddcb1f7756
Consent-ID: qwer3456tzui7890
PSU-User-Agent: Mozilla/5.0 (Windows NT 10.0; WOW64; rv:54.0)
Gecko/20100101 Firefox/54.0
Date: Thu, 29 Oct 2020 15:05:37 GMT

```



## Response

HTTP/1.x 200 Ok

X-Request-ID: 99391c7e-ad88-49ec-a2ad-99ddcb1f7756

Content-Type: application/json

Date: Thu, 29 Oct 2020 15:05:38 GMT

```
{
  "loanAccounts": [
    {
      "resourceId": "3dc3d5b3-7023-4848-9853-f5400a64e81g",
      "other": {"identification": "MyProprietaryID-0003"},
      "currency": "EUR",
      "ownerName": "Paul Simpson",
      "name": " Silver",
      "product": "Retail loan",
      "cashAccountType": "LOAN",
      "interest": [
        {"type": "FIXD" ,
          "rate":
            [{"percentage": "4.5"}
          ],
          "toDateTime": "2021-01-05T23:59:59"
        }
      ],
      "relatedDates": {
        "contractStartDate": "2017-01-01",
        "contractEndDate": "2023-01-01",
        "contractAvailabilityDate" : "2020-01-01"
      },
      "collateralsInvolved": false,
      "balances":
      [{"balanceAmount": {"currency": "EUR", "amount": "-80000.00"},
        "balanceType": "closingBooked",
        "referenceDate": "2020-10-30"
      }],
      "_links": {
        "balances": {"href": "/v1/loans/3dc3d5b3-7023-4848-9853-f5400a64e81g/balances" },
        "transactions": {"href": "/v1/loans/3dc3d5b3-7023-4848-9853-f5400a64e81g/transactions" }}
    },
  ],
}
```



```

{
  "resourceId": "3dc3d5b3-7023-4848-9853-f5400a64e816",
  "other": {"identification": "MyProprietaryID-0004"},
  "currency": "EUR",
  "ownerName": "Paul Simpson",
  "name": " Silver",
  "product": "Retail loan",
  "cashAccountType": "LOAN",
  "interest":[
    {"type": "FIXD" ,
      "rate":
        [{"percentage": "4.5"}
        ],
      "toDateTime": "2021-01-05T23:59:59"
    }
  ],
  "relatedDates":{
    "contractStartDate": "2017-01-01",
    "contractEndDate":"2023-01-01",
    "contractAvailabilityDate" : "2020-01-01"
  },
  "collateralsInvolved": false,
  "balances":
  [{"balanceAmount": {"currency": "USD", "amount": "-10000.00"},
    "balanceType": "closingBooked",
    "referenceDate": "2020-10-30"
  }],
  "_links": {
    "balances": {"href": "/v1/loans/3dc3d5b3-7023-4848-9853-
f5400a64e816/balances" },
    "transactions": {"href": "/v1/loans/3dc3d5b3-7023-4848-9853-
f5400a64e816/transactions" }}
  },
  {
    "resourceId": "3dc3d5b3-10a4-4848-9853-f5400a64e81g",
    "iban": "DE40100100103307118608",
    "currency": "EUR",
    "ownerName": "Paul Simpson",
    "name": " Happy Home 2008",
    "product": "Mortgage loan",
    "cashAccountType": "LOAN",
    "interest":[
      {"type": "FIXD" ,
        "rate":
          [{"percentage": "2.0"}
          ]
      }
    ]
  }
}

```





```

    ],
    "toDateTime": "2039-12-31T23:59:59"
  }
],
"relatedDates":{
  "contractStartDate": "2020-01-01",
  "contractEndDate":"2040-01-01",
  "contractAvailabilityDate" : "2030-01-01"
},
"collateralsInvolved": false,
"balances":
[{"balanceAmount": {"currency": "EUR", "amount": "-100000.00"},
  "balanceType": "closingBooked",
  "referenceDate": "2020-10-01"
}],
  "_links": {
    "balances": {"href": "/v1/loans/3dc3d5b3-10a4-4848-9853-
f5400a64e81g/balances" },
    "transactions": {"href": "/v1/loans/3dc3d5b3-10a4-4848-9853-
f5400a64e81g/transactions" }}
  }
}]

```

## 6.2 Read Loan Account Details

### 6.2.1 Request

#### Call

```
GET /v1/loans/{loan-account-id}
```

Reads details about a loan account. It is assumed that a consent of the PSU to this access is already given and stored on the ASPSP system. The addressed details of this account depends then on the stored consent addressed by consentId, respectively the OAuth2 access token.

#### Path Parameters

Attribute	Type	Description
loan-account-id	String	This identification is denoting the addressed loan-account. The loan-account-id is retrieved by using a "Read Loan Account List". The loan-account-id is the "resourceId" attribute

		of the loan account structure. Its value is constant at least throughout the lifecycle of a given consent.
--	--	--

## Query Parameters

No specific query parameter.

## Request Header

Attribute	Type	Condition	Description
X-Request-ID	UUID	Mandatory	ID of the request, unique to the call, as determined by the initiating party.
PSU-IP-Address	String	Conditional	The forwarded IP Address header field consists of the corresponding HTTP request IP Address field between PSU and TPP. It shall be contained if and only if this request was actively initiated by the PSU.
Consent-ID	String	Mandatory	Identification of the corresponding consent as granted by the PSU.
Authorization	String	Conditional	Is contained only, if an OAuth2 based SCA was performed in the corresponding mandate transaction or if OAuth2 has been used in a pre-step.

## Request Body

No request body.

## 6.2.2 Response

### Response Code

HTTP Response Code equals 200.

## Response Header

Attribute	Type	Condition	Description
X-Request-ID	UUID	Mandatory	ID of the request, unique to the call, as determined by the initiating party.

## Response Body

Attribute	Type	Condition	Description
loanAccount	Account Details	Mandatory	Description of the addressed loan account.

**Remark:** The same syntactical structure is used to transport **loan account** information as **(payment) account** information.

### 6.2.3 Example 1 (standard loan account)

Request (without PSU involvement)

GET <https://api.testbank.com/v1/loans/3dc3d5b3-7023-4848-9853-f5400a64e81g>

```
Accept: application/json
X-Request-ID: 99391c7e-ad88-49ec-a2ad-99ddcb1f7756
Consent-ID: qwer3456tzui7890
PSU-User-Agent: Mozilla/5.0 (Windows NT 10.0; WOW64; rv:54.0)
Gecko/20100101 Firefox/54.0
Date: Thu, 29 Oct 2020 15:05:37 GMT
```

## Response

```
HTTP/1.x 200 Ok
X-Request-ID: 99391c7e-ad88-49ec-a2ad-99ddcb1f7756
Content-Type: application/json
Date: Thu, 29 Oct 2020 15:05:38 GMT
```

```
{
  "loanAccount":
```

```
{
  "resourceId": "3dc3d5b3-7023-4848-9853-f5400a64e81g",
  "iban": "DE2310010010123456788",
  "currency": "EUR",
  "ownerName": "Paul Simpson",
  "name": " Silver",
  "product": "Retail loan",
  "cashAccountType": "LOAN",
  "status": "enabled",
  "interest":[
    {"type": "FIXD" ,
      "rate":
        [{"percentage": "4.5"}
        ],
      "toDate": "2021-01-05T23:59:59"
    }
  ],
  "relatedDates":{
    "contractStartDate": "2017-01-01",
    "contractEndDate":"2023-01-01",
    "contractAvailabilityDate" : "2020-01-01"
  },
  "collateralsInvolved": false,
  "balances":
  [{"balanceAmount": {"currency": "EUR", "amount": "-80000.00"},
    "balanceType": "closingBooked",
    "referenceDate": "2020-10-01"
  }],
  "_links": {
    "balances": {"href": "/v1/loans/3dc3d5b3-7023-4848-9853-f5400a64e81g/balances" },
    "transactions": {"href": "/v1/loans/3dc3d5b3-7023-4848-9853-f5400a64e81g/transactions" }}
  }
}
```

## 6.3 Read Loan Account Balances

### 6.3.1 Request

#### Call

GET /v1/loans/{loan-account-id}/balances

Reads balance data from a given loan account addressed by "loan-account-id".



## Path Parameters

Attribute	Type	Description
loan-account-id	String	This identification is denoting the addressed loan account. The loan-account-id is retrieved by using a "Read Loan Account List" call. The loan-account-id is the "resourceId" attribute of the account structure. Its value is constant at least throughout the lifecycle of a given consent.

## Query Parameters

No specific query parameter.

## Request Header

Attribute	Type	Condition	Description
X-Request-ID	UUID	Mandatory	ID of the request, unique to the call, as determined by the initiating party.
PSU-IP-Address	String	Conditional	The forwarded IP Address header field consists of the corresponding HTTP request IP Address field between PSU and TPP. It shall be contained if and only if this request was actively initiated by the PSU.
Consent-ID	String	Mandatory	Identification of the corresponding consent as granted by the PSU.
Authorization	String	Conditional	Is contained only, if an OAuth2 based SCA was performed in the corresponding mandate transaction or if OAuth2 has been used in a pre-step.

## Request Body

No request body.

## 6.3.2 Response

### Response Code

HTTP Response Code equals 200.

### Response Header

Attribute	Type	Condition	Description
X-Request-ID	UUID	Mandatory	ID of the request, unique to the call, as determined by the initiating party.

### Response Body

Attribute	Type	Condition	Description
loanAccount	Account Reference	Optional	Identifier of the addressed loan-account.  <b>Remark for Future:</b> Might be mandated in a later version.
balances	Array of Balance	Mandatory	

## 6.3.3 Example

Request (without PSU involvement)

GET <https://api.testbank.com/v1/loans/3dc3d5b3-7023-4848-9853-f5400a64e81g/balances>

```
Accept: application/json
X-Request-ID: 99391c7e-ad88-49ec-a2ad-99ddcb1f7756
Consent-ID: qwer3456tzui7890
PSU-User-Agent: Mozilla/5.0 (Windows NT 10.0; WOW64; rv:54.0)
Gecko/20100101 Firefox/54.0
Date: Thu, 29 Oct 2020 15:05:37 GMT
```



## Response

HTTP/1.x 200 Ok

X-Request-ID: 99391c7e-ad88-49ec-a2ad-99ddcb1f7756

Content-Type: application/json

Date: Thu, 29 Oct 2020 15:05:38 GMT

```
{
  "loanAccount": {"iban": "DE2310010010123456788"},
  "balances": [
    {"balanceAmount": {"currency": "EUR", "amount": "-80000.00"},
      "balanceType": "closingBooked",
      "referenceDate": "2020-10-01"
    },
    {"balanceAmount": {"currency": "EUR", "amount": "-82500.00"},
      "balanceType": "expected",
      "lastChangeDateTime": "2020-11-20T15:30:35.035Z"
    }
  ]
}
```

## 6.4 Read Loan Account Transaction List

### 6.4.1 Request

#### Call

GET /v1/loans/{loan-account-id}/transactions {query-parameters}

Reads transaction data from a given loan account addressed by "loan-account-id". This can be booked or pending transactions.

**Note:** The ASPSP might use standard compression methods on application level for the response message as indicated in the content encoding header.

**Remark:** Please note that the PATH might be already given in detail by the response of the "Read Loan Account List" call within the `_links` subfield.

#### Path Parameters



Attribute	Type	Description
loan-account-id	String	This identification is denoting the addressed loan account. The loan-account-id is retrieved by using a "Read Loan Account List" call. The loan-account-id is the "resourceId" attribute of the account structure. Its value is constant at least throughout the lifecycle of a given consent.

### Query Parameters

Attribute	Type	Condition	Description
dateFrom	ISODate	Conditional	<p>Starting date (inclusive the date dateFrom) of the transaction list, mandated if no delta access is required and if bookingStatus does not equal "information". Might be ignored if a delta function is used or if bookingStatus equals "information".</p> <p>For booked transactions, the relevant date is the booking date. For pending transactions, the relevant date is the entry date, which may not be transparent neither in this API nor other channels of the ASPSP.</p>
dateTo	ISODate	Optional	<p>End date (inclusive the date dateTo) of the transaction list, default is "now" if not given. Might be ignored if a delta function is used.</p> <p>For booked transactions, the relevant date is the booking date. For pending transactions, the relevant date is the entry date, which may not be transparent neither in this API nor other channels of the ASPSP.</p>
entryReferenceFrom	String	Optional if supported by API provider	This data attribute is indicating that the AISP is in favour to get all transactions after the transaction with identification entryReferenceFrom alternatively to



Attribute	Type	Condition	Description
			<p>the above defined period. This is a implementation of a delta access.</p> <p>If this data element is contained, the entries "dateFrom" and "dateTo" might be ignored by the ASPSP if a delta report is supported.</p>
bookingStatus	String	Mandatory	<p>Permitted codes are "booked", "pending", "both" and "information".</p> <p>"booked" shall be supported by the ASPSP.</p> <p>To support the "pending" and "both" feature is optional for the ASPSP, Error code if not supported. If supported, "both" means to request transaction reports of transaction of bookingStatus either "pending" or "booked".</p> <p>To support the "information" feature is optional for the ASPSP. If the ASPSP supports the "information" feature for loan accounts, the response shall contain the expected amortizations for this loan account. Error code if not supported.</p>
deltaList	Boolean	Optional if supported by API provider	<p>This data attribute is indicating that the AISP is in favour to get all transactions after the last report access for this PSU on the addressed account. This is another implementation of a delta access-report.</p> <p>This delta indicator might be rejected by the ASPSP if this function is not supported.</p> <p>If this data element is contained, the entries "dateFrom" and "dateTo" might be ignored by the ASPSP if a delta report is supported.</p>

## Request Header

Attribute	Type	Condition	Description
X-Request-ID	UUID	Mandatory	ID of the request, unique to the call, as determined by the initiating party.
PSU-IP-Address	String	Conditional	The forwarded IP Address header field consists of the corresponding HTTP request IP Address field between PSU and TPP. It shall be contained if and only if this request was actively initiated by the PSU.
Consent-ID	String	Mandatory	
Authorization	String	Conditional	Is contained only, if an OAuth2 based authentication was performed in a pre-step or an OAuth2 based SCA was performed in the related consent authorisation.
Accept	String	Optional	<p>The TPP can indicate the formats of account reports supported together with a prioritisation following the HTTP header definition.</p> <p>The formats supported by this specification are</p> <ul style="list-style-type: none"> <li>• xml</li> <li>• JSON</li> <li>• text</li> </ul> <p><b>Remark:</b> Content types might be extended in the next version of the specification. This shall enable the TPP to address different camt.05x versions or different MT94x versions in a corporate context. The TPP then could e.g. say: "I prefer MT942, but take MT940 if MT942 is not available."</p>

**Remark:** The Berlin Group intends to apply for vnd-entries within the "accept" attribute for camt.05x and MT94x formats to scope with different account report formats available for the PSU e.g. in a corporate context. These values will be added to this specification as soon as available. This will then lead to expressions like /application/vnd.BerlinGroup.camt.053+xml etc. The TPP then could e.g. say: "I prefer camt.054, but take camt.053 if this is not available."



This solution is recommended as a best practice until it is fully specified. In this example this would deliver the following accept header expression:

```
Accept: /application/vnd.BerlinGroup.camt.054+xml;q=0.9,
/application/vnd.BerlinGroup.camt.053+xml;q=0.8
```

## Request Body

No request body.

## 6.4.2 Response

### Response Code

HTTP Response Code equals 200.

### Response Header

Attribute	Type	Condition	Description
X-Request-ID	UUID	Mandatory	ID of the request, unique to the call, as determined by the initiating party.

### Response Body

In case the ASPSP returns a **camt.05x** XML structure, the response body consists of either a camt.052 or camt.053 format. The camt.052 may include pending payments which are not yet finally booked. The ASPSP will decide on the format due to the chosen parameters, specifically on the chosen dates relative to the time of the request. In addition the ASPSP might offer camt.054x structure e.g. in a corporate setting.

In case the ASPSP returns a **MT94x** content, the response body consists of an MT940 or MT942 format in a text structure. The MT942 may include pending payments which are not yet finally booked. The ASPSP will decide on the format due to the chosen parameters, specifically on the chosen dates relative to the time of the request.

A JSON response is defined as follows:

Attribute	Type	Condition	Description
loanAccount	Account Reference	optional	Identifier of the addressed loan account.

Attribute	Type	Condition	Description
			Remark for Future: It is recommended to use this data element. The condition might change to "mandatory" in a next version of the specification.
transactions	Account Report	Optional	JSON based account report.  This account report contains transactions resulting from the query parameters.
balances	Array of Balance	Optional	A list of balances regarding this account, which might be restricted to the current balance.
_links	Links	Optional	A list of hyperlinks to be recognised by the TPP.  Type of links admitted in this response:  "download": a link to a resource, where the transaction report might be downloaded from in case where transaction reports have a huge size.  <b>Remark:</b> This feature shall only be used where camt-data is requested which has a huge size.

### 6.4.3 Example

GET <https://api.testbank.com/v1/loans/3dc3d5b3-7023-4848-9853-f5400a64e81g/transactions?dateFrom=2020-08-30?dateTo=2020-10-31?bookingStatus=both>

Accept: application/json

X-Request-ID: 99391c7e-ad88-49ec-a2ad-99ddcb1f7721

#### **Response (Example 1)**

Response in JSON format for an access on a regular account

HTTP/1.x 200 Ok

X-Request-ID: 99391c7e-ad88-49ec-a2ad-99ddcb1f7721

Date: Thu, 29 Oct 2020 15:05:38 GMT

Content-Type: application/json



```
{
  "loanAccount": {"iban": "DE2310010010123456788" },
  "transactions":
  {
    "booked":
    [
      {
        "transactionId": "1234567",
        "transactionAmount": {"currency": "EUR", "amount": "1250"},
        "bookingDate": "2020-08-30",
        "valueDate": "2020-08-31",
        "remittanceInformationUnstructured": "Amortization Aug 2020"
      },
      {
        "transactionId": "1234567",
        "transactionAmount": {"currency": "EUR", "amount": "1250"},
        "bookingDate": "2020-09-29",
        "valueDate": "2020-09-30",
        "remittanceInformationUnstructured": "Amortization Sep 2020"
      },
      {
        "transactionId": "1234568",
        "transactionAmount": {"currency": "EUR", "amount": "-10.00"},
        "bookingDate": "2020-09-30",
        "valueDate": "2020-09-30",
        "remittanceInformationUnstructured": "Interest Q3 2020"
      }
    ],
    "pending":
    [
      {
        "transactionId": "1234569",
        "transactionAmount": {"currency": "EUR", "amount": "1250"},
        "valueDate": "2020-10-31",
        "remittanceInformationUnstructured": " Amortization Oct 2020"
      }
    ]
  }
}
```



## 7 Complex Data Types

To support the more detailed selection of consents existing Data types must be extended. This chapter describes the new data type definitions. Changes to the existing definition are highlighted.

### 7.1 Extension of existing Data Types

#### 7.1.1 Account Access

Attribute	Type	Condition	Description
accounts	Array of Account Reference	Optional	<p>Is asking for detailed account information.</p> <p>If the array is empty, the TPP is asking for an accessible account list. This may be restricted in a PSU/ASPSP authorization dialogue. If the array is empty, also the arrays for balances or transactions shall be empty, if used.</p>
balances	Array of Account Reference	Optional	<p>Is asking for balances of the addressed accounts.</p> <p>If the array is empty, the TPP is asking for the balances of all accessible account lists. This may be restricted in a PSU/ASPSP authorization dialogue. If the array is empty, also the arrays for accounts or transactions shall be empty, if used.</p>
transactions	Array of Account Reference	Optional	<p>Is asking for transactions of the addressed accounts.</p> <p>If the array is empty, the TPP is asking for the transactions of all accessible account lists. This may be restricted in a PSU/ASPSP authorization dialogue. If the array is empty, also the arrays for</p>

Attribute	Type	Condition	Description
			accounts or balances shall be empty, if used.
availableAccounts	String	Optional if supported by API provider	Only the value "allAccounts" is admitted.
availableAccounts WithBalance	String	Optional, if supported by API provider	Only the value "allAccounts" is admitted.



Attribute	Type	Condition	Description
allPsd2	String	Optional if supported by API provider	Only the value "allAccounts" is admitted.
restrictedTo	Array of Cash Account Type	Conditional if supported by API provider.	<p>If the TPP requests access to accounts via availableAccounts (List of available accounts), global or bank driven consents, the TPP may include this element to restrict access to the referred account types.</p> <p>Absence of the element is interpreted as "no restriction" (therefore access to accounts of all types is requested). The element may only occur, if each of the elements</p> <ul style="list-style-type: none"> <li>• accounts</li> <li>• balances</li> <li>• transactions</li> </ul> <p>is either not present or contains an empty array.</p> <p><b>Remark for Future:</b> In a future version of the XS2A-Interface the data model for consents will be changed and therefore this element will most likely become obsolete.</p>

### 7.1.2 Account Reference

This type is containing any account identification which can be used on payload-level to address specific accounts. The ASPSP will document which account reference type it will support. Exactly one of the attributes defined as "conditional" shall be used.

**Remark:** The currency of the account is needed, where the currency is an account characteristic identifying certain sub-accounts under one external identifier like an IBAN. These sub-accounts are separated accounts from a legal point of view and have separated balances, transactions etc.



Attribute	Type	Condition	Description
iban	IBAN	Conditional	
bban	BBAN	Conditional	This data elements can be used for payment / savings / loan accounts when no IBAN is provided.
pan	Max35Text	Conditional	Primary Account Number (PAN) of a card, can be tokenised by the ASPSP due to PCI DSS requirements.
maskedPan	Max35Text	Conditional	Primary Account Number (PAN) of a card in a masked form.
msisdn	Max35Text	Conditional	An alias to access a payment account via a registered mobile phone number.
other	Other Type	Conditional	<p>In cases where the criteria listed above (IBAN, BBAN,MSISDN) are not provided to identify the account (e.g. a savings account), the ASPSP shall support delivery of a proprietary ID of the respective account that uniquely identifies the account for this ASPSP. This ID will be delivered within the "other" structure.</p> <p>In this case, the ASPSP specifically shall support consent establishment for an account identified by its proprietary ID.</p> <p><b>Remark:</b> An ASPSP does not have to support the "other" element for (regular payment) accounts.</p>
currency	Currency Code	Optional	ISO 4217 Alpha 3 currency code
cashAccountType	Cash Account Type	Optional, if supported by API provider.	<p>ExternalCashAccountType1Code from ISO 20022</p> <p>The API provider may restrict the accepted values further (e.g. only</p>

Attribute	Type	Condition	Description
			<p>"SVGS" and "CACC" may be supported).</p> <p>The TPP includes this element, if the account reference may identify several accounts of different types, but the TPP only requests access to a specific type (e.g. card accounts).</p> <p><b>Remark:</b></p> <p>Savings: SVGS for saving accounts</p> <p>Loan: "LOAN" for loan accounts</p> <p>If the cashAccountType is not present, it indicates the cashAccountType</p> <ul style="list-style-type: none"> <li>• "Card Account" in case of the account identification being provided as a maskedPan or a pan and</li> <li>• "Current Account" (CACC) otherwise.</li> </ul>

### 7.1.3 Account Details

Attribute	Type	Condition	Description
resourceId	String	Conditional	This is the data element to be used in the path when retrieving data from a dedicated account, cp. [XS2A-IG], Section 6.5.3 or Section 6.5.4 below. This shall be filled, if addressable resource are created by the ASPSP on the /accounts endpoint.
iban	IBAN	Optional	This data element can be used in the body of the Consent Request Message for retrieving account access consent from this payment account, cp. [XS2A-IG], Section 6.3.1.1.

Attribute	Type	Condition	Description
bban	BBAN	Optional	This data element can be used in the body of the Consent Request Message for retrieving account access consent from this account, cp. [XS2A-IG], Section 6.3.1.1. This data elements is used for payment accounts which have no IBAN.
msisdn	Max35Text	optional	An alias to access a payment account via a registered mobile phone number. This alias might be needed e.g. in the payment initiation service, cp. [XS2A-IG], Section 5.3.1. The support of this alias must be explicitly documented by the ASPSP for the corresponding API Calls.
other	Other Type	Conditional	In cases where the criteria listed above (IBAN, BBAN, MSISDN) are not provided to identify an instance of the respective account type (e.g. a savings account), the ASPSP shall include a proprietary ID of the respective account that uniquely identifies the account for this ASPSP.
currency	Currency Code	Mandatory	Account currency
ownerName	Max140Text	Optional	Name of the legal account owner. If there is more than one owner, then e.g. two names might be noted here.  For a corporate account, the corporate name is used for this attribute.  Even if supported by the ASPSP, the provision of this field might depend on the fact whether an explicit consent to this specific additional account information has been given by the PSU.
name	Max70Text	Optional	Name of the account, as assigned by the ASPSP, in agreement with the account



Attribute	Type	Condition	Description
			owner in order to provide an additional means of identification of the account.
displayName	Max70Text	Optional	Name of the account as defined by the PSU within online channels.
product	Max35Text	Optional	Product Name of the Bank for this account, proprietary definition
cashAccountType	Cash Account Type	Optional	ExternalCashAccountType1Code from ISO 20022
status	String	Optional	<p>Account status. The value is one of the following:</p> <ul style="list-style-type: none"> <li>• "enabled": account is available</li> <li>• "deleted": account is terminated</li> <li>• "blocked": account is blocked e.g. for legal reasons</li> </ul> <p>If this field is not used, than the account is available in the sense of this specification.</p> <p>To be discussed: Are new status values required to correctly describe the status of a savings account or loan account?</p>
bic	BICFI	Optional	The BIC associated to the account.
interest	Array of Interest (cp. 7.2)	Optional	<p>A set of interest rates associated to this account, e.g. interests for savings or credits.</p> <p>Optionally used for savings accounts and loan accounts.</p>
relatedDates	Related Dates (cp. 7.2)	Optional	Dates related to this account, e.g. start Date
collateralsInvolved	Boolean	Optional	Only used for loan accounts: Is set to true if a collateral is involved securing the loan



Attribute	Type	Condition	Description
			(e.g. security deposit, physical collaterals like houses, cars). More information might be provided under the "details" attribute.
guaranteeInvolved	Boolean	Optional	Only used for loan accounts: Is set to true in case of specific collaterals where a guarantee of payment of the loan is given by a different person.
linkedAccounts	Max70 Text	Optional	This data attribute is a field, where an ASPSP can name a cash account associated to pending loan, savings or card transactions.
usage	Max4 Text	Optional	Specifies the usage of the account <ul style="list-style-type: none"> <li>- PRIV: private personal account</li> <li>- ORGA: professional account</li> </ul>
details	Max500 Text	Optional	Specifications that might be provided by the ASPSP <ul style="list-style-type: none"> <li>- characteristics of the account</li> <li>- characteristics of the relevant card</li> <li>- characteristics of the saving account, and the ASPSP will provide specification for each deposit</li> <li>- characteristics of the loan</li> </ul>
balances	Array of Balances	Conditional	
_links	Links	Optional	Links to the account, which can be directly used for retrieving account information from this dedicated account.  Links to "balances" and/or "transactions"



Attribute	Type	Condition	Description
			These links are only supported, when the corresponding consent has been already granted.

#### 7.1.4 Balance Type

The used balance type is restricted to the balanceTypes not marked in grey. balanceTypes marked in grey do not apply to loans or savings.

Type	Description
closingBooked	<p>Balance of the account at the end of the pre-agreed account reporting period. It is the sum of the opening booked balance at the beginning of the period and all entries booked to the account during the pre-agreed account reporting period.</p> <p>For card-accounts, this is composed of</p> <ul style="list-style-type: none"> <li>invoiced, but not yet paid entries</li> </ul>
expected	<p>Balance composed of booked entries and pending items known at the time of calculation, which projects the end of day balance if everything is booked on the account and no other entry is posted.</p> <p>For card accounts, this is composed of</p> <ul style="list-style-type: none"> <li>invoiced, but not yet paid entries,</li> <li>not yet invoiced but already booked entries and</li> <li>pending items (not yet booked)</li> </ul> <p>For savings and loans: estimated balance (e.g. including an upcoming interest payment) for the referenced date.</p>
openingBooked	Book balance of the account at the beginning of the account reporting period. It always equals the closing book balance from the previous report.
interimAvailable	Available balance calculated in the course of the account 'servicer's business day, at the time specified, and subject to further changes during the business day. The interim balance is calculated on the basis of booked credit and debit items during the calculation time/period specified.

Type	Description
	For card-accounts, this is composed of <ul style="list-style-type: none"> <li>invoiced, but not yet paid entries,</li> <li>not yet invoiced but already booked entries</li> </ul>
interimBooked	Balance calculated in the course of the account servicer's business day, at the time specified, and subject to further changes during the business day. The interim balance is calculated on the basis of booked credit and debit items during the calculation time/period specified.
forwardAvailable	Forward available balance of money that is at the disposal of the account owner on the date specified.
nonInvoiced	Only for card accounts, to be defined yet.

## 7.2 New Data Types

### 7.2.1 Other Type

The "other" type is defined in the same way as in [XS2A-DOM-IG]:

Attribute	Type	Condition	Description
identification	Max35Text	Mandatory	
schemeName Code	Code	Optional	An entry provided by an external ISO code list
schemeName Proprietary	Max35Text	Optional	A scheme name defined in a proprietary way.
issuer	Max35Text	Optional	Issuer of the identification

### 7.2.2 Related Dates

The new "Related Dates" data type is used for saving accounts as well as for loan accounts:

Attribute	Type	Condition	Description
contractStartDate	ISODate	Optional	Start of the account contract

Attribute	Type	Condition	Description
contractEndDate	ISODate	Optional	End of the account contract
contractAvailabilityDate	ISODate	Optional	Next Date where money can be taken off a saving account without loss of interest, if initiated now (in case of a saving account).  Next Date where a loan can be fully repaid without any extra fee.

**Remark:** In the future, the "relatedDates" structure might be extended by an "proprietary" element containing an array of dates in connection with a type that describes the usage of the respective date.

### 7.2.3 Interest

The new "Interest" data type is used for saving accounts as well as for loan accounts:

Attribute	Type	Condition	Description
type	Interest Type Code	Optional	FIXD and INDE are the only permitted code for now
relatedIndices	Array of Index	Optional	List of Indices where the interest rate is related to.
rate	Array of AmountDependentRate	Mandatory	An array of interest rates, which might apply to different amount ranges
fromDateTime	ISO-DateTime	Optional	The date from which this interest rate is applicable. If no exact time is applicable, 00:00:00 is chosen as time definition.
toDateTime	ISODateTime	Optional	The date until this interest rate is applicable. If no exact time is applicable, 23:59:59 is chosen as time definition.



Attribute	Type	Condition	Description
change Mechanism	Max1024Text	Optional	An explanation of a mandated change mechanism.

**Remark:** The following ISO definitions apply for these codes (ISO Interesttype3code):

**FIXD:** Indicates that the type of interest is fixed. This is a fixed interest for the period defined either in the interest entry or implicitly by the contract period.

**INDE:** Indicates that the type of interest is index. This rate could relate e.g. to interest rates of central banks.

#### 7.2.4 Index

Attribute	Type	Condition	Description
index	Max35Text	Optional	The following codes are supported:  "CPI" – customer Price Index  "FC" – foreign currency  "other" – for others, not clearly specified index relations
rootIndexValue	Max35Text	Optional	A number giving the basic index value in case of CPI which is the basis for the loan contract.
exchangeRate	AmountDependentRate	Optional	Used in case of FC index
additional Information	Max500Text	Optional	Explanations e.g. on the "other" type.

## 7.2.5 AmountDependentRate

Attribute	Type	Condition	Description
percentage	Signed Percentage	Mandatory	The (signed) rate of the interest.
fromAmount	Amount	Optional	Amount from which the interest rate applies.
toAmount	Amount	Optional	Amount until the interest rate applies.

**Remark:** ISO 20022 is defining Percentage as a decimal type, where 5.0 expresses 5% interest rate. This specification is using a signed percentage to be able to express also negative percentage codes, i.e. -1.2 will express -1,2% of interest.

## 7.2.6 Examples for Interest Elements

### 7.2.6.1 Fixed Interest Rate for five Years

If the interest rate is fixed at 1.5% for a period of five years (2021-01-01 to 2025-12-31), the "interest" object shall at least include exactly one item of the following form:

```
"interest":[
  {"type": "FIXD" ,
   "rate":
     [{"percentage": "1.5"}
    ],
   "toDateTime": "2025-12-31T23:59:59"
  }
]
```

### 7.2.6.2 Annually increasing Interest Rate for two Years

If the interest rate is set at 1% for the first year and increasing by 0.2 percentage points per year for a period of five years (2021-01-01 to 2022-12-31), the "interest" object should include items of the following form:

```
"interest":[
  {"type": "FIXD" ,
   "rate":
```

```

        [{"percentage": "1.0"}
        ],
        "toDateTime": "2021-12-31T23:59:59"
    },
    {"type": "FIXD" ,
    "rate":
        [{"percentage": "1.2"}
        ],
        "fromDateTime": "2022-01-01T00:00:00",
        "toDateTime": "2022-12-31T23:59:59"
    }
]

```

**Remark:** Delivery of historic interest rates is not required.

### 7.2.6.3 Interest Rate composed of a fixed Component plus the Prime Rate

If the interest rate is set at 1.0% plus the ECB's interest rate on the main refinancing operations ("Prime Rate") for a period of five years (2021-01-01 to 2025-12-31), the "interest" object shall at least include items of the following form:

```

"interest":[
  {"type": "FIXD" ,
  "rate":
    [{"percentage": "1.0"}
    ],
    "toDateTime": "2025-12-31T23:59:59"
  },
  {"type": "INDE" ,
  "relatedIndices":
    [{
      "index":"other",
      "additionalInformation": "ECB MRO Interest Rate"
    }],
  "rate":
    [{"percentage": "0.0"}
    ]
  }
]

```

If the ECB's interest rate would change to 1.0% effective 2021-06-01, the "interest" object shall change and afterwards contain at least items of the following form:

```
"interest":[
  {"type": "FIXD" ,
   "rate":
     [{"percentage": "1.0"}
    ],
   "toDateTime": "2025-12-31T23:59:59"
  },
  {"type": "INDE" ,
   "relatedIndices":
     [{
       "index":"other",
       "additionalInformation": "ECB MRO Interest Rate"
     }
    ],
   "rate":
     [{"percentage": "1.0"}
    ],
   "fromDateTime": "2021-06-01T00:00:00+02:00"
  }
]
```

#### 7.2.6.4 Interest Rate composed of a fixed Component plus inflation

Assuming the interest rate is set at 1.0% plus inflation rate measured by the change of the consumer price index (CPI). If the CPI was 120 on 2021-01-01 (reference date for CPI changes) and changed to 120,1 for March 2021 (published in 2021-04-01), the "interest" object for a response from April 2021 should contain the following items

```
"interest":[
  {"type": "FIXD" ,
   "rate":
     [{"percentage": "1.0"}
    ],
   "toDateTime": "2025-12-31T23:59:59"
  },
  {"type": "INDE" ,
   "relatedIndices":
     [{
       "index":"CPI",
       "rootIndexValue": "120"
     }
    ],
   "rate":
     [{"percentage": "0.08"}
    ],
  },
]
```



```
"fromDateTime": "2021-03-018T00:00:00+02:00"  
]
```

### 7.2.6.5 Interest Rate composed of a fixed Component plus an Index in foreign Currency

An example that includes an indexed component in foreign currency will be provided in a later version of the document.



## 8 References

- [XS2A-OR] NextGenPSD2 XS2A Framework, Operational Rules, The Berlin Group Joint Initiative on a PSD2 Compliant XS2A Interface, version 1.3, published 21 December 2018
- [XS2A-IG] NextGenPSD2 XS2A Framework, Implementation Guidelines, The Berlin Group Joint Initiative on a PSD2 Compliant XS2A Interface, version 1.3.9, published 29 March 2021
- [XS2A-DOM-IG] NextGenPSD2 XS2A Framework Domestic PIS and AIS Definitions, Implementation Guidelines, The Berlin Group Joint Initiative on a PSD2 Compliant XS2A Interface, version 1.3.8, published 30 October 2020.
- [EBA-RTS] Commission Delegated Regulation (EU) 2018/389 of 27 November 2017 supplementing Directive 2015/2366 of the European Parliament and of the Council with regard to Regulatory Technical Standards for Strong Customer Authentication and Common and Secure Open Standards of Communication, C(2017) 7782 final, published 13 March 2018
- [eIDAS] Regulation (EU) No 910/2014 of the European Parliament and of the Council on Electronic Identification and Trust Services for Electronic Transactions in the Internal Market, 23 July 2014, published 28 August 2014
- [PSD2] Directive (EU) 2015/2366 of the European Parliament and of the Council on payment services in the internal market, published 23 December 2015

